

**TOP SECRET**

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SUBJECT: MEMO ENTITLED "TARGET/IMAGE PLANE TRANSFORMATION AND COORDINATE SYSTEM DEFINITION"

1. THE COORDINATE SYSTEMS AND ORDER OF ROTATIONS AS DEFINED UNDER NPIC-A AND NPIC-B ARE CORRECT.

2. EQUIVALENCE TO THE B MATRIX, AS DEFINED IN SECTION III-C, CAN BE OBTAINED WITH THE PROPER USE OF THE TV AND TO MATRICES. THE PROPER SIGNS OF THE RESPECTIVE ELEMENTS OF THE B MATRIX ARE OBTAINED BY CHANGING THE SENSE OF THE PRIMED ANGLES TO CONFORM TO THE SENSE OF THE UNPRIMED ANGLES, AS YOU HAVE STATED IN THE MEMO.

3. IF, IN FACT, THE CORRELATION DATA IS DEFINED ACCORDING TO THE TRW-G CONVENTION, THEN IT WOULD HAVE BEEN MORE APPROPRIATE TO ADOPT THIS SYSTEM FOR THE BASIC DERIVATION IN SECTION III-C OF THE MEMO. THIS IS THE EQUIVALENCE NEEDED BY USERS OF THE CORRELATION DATA. IRRESPECTIVE, HOWEVER, EQUIVALENCE TO THE TRW-G CONVENTION CAN BE ESTABLISHED BY A SIMILAR METHOD OF APPROACH.

4. CONCERNING OUR MEETING OF 27 JUNE WITH [ ] YOU CONFIRMED THE CORRECTNESS OF THE M-GP AND M-MP MATRICES AS DERIVED IN REFERENCE

[ ] THE REASON POSTULATED FOR A REVERSE IN SIGNS OF

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Declassification Review by NGA/DoD

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THE ELEMENTS IN THE SECOND ROW OF THE M-GP MATRIX WHEN COMPARED TO THE B MATRIX ON PAGE 10 OF THE MEMO DATED 4 DECEMBER 1965 WAS THE DIFFERENCE BETWEEN DERVIATION IN A POSITIVE VERSUS A DERIVATION IN THE NEGATIVE. IF THIS IS TRUE, THEN WHY IS THE A PRIME MATRIX ON PAGE 19 OF THE RECENT MEMO IDENTICAL TO THE M-GP MATRIX? A REVERSE IN SIGNS OF THE ELEMENTS IN THE SECOND ROW WOULD BE EXPECTED IF DERIVATION IS IN THE NEGATIVE PLANE. REQUEST THAT CLARIFICATION AND A DOUBLE CHECK ON THE CORRECTNESS OF THE M-GP MATRIX BE MADE. TRANSFORMATION TO THE IMAGE PLANE USING THE M-GP MATRIX WOULD BE MADE BY SCALING WITH THE Z-PHOTO COMPONENT EQUATED TO  $-F$ , THE FOCAL LENGTH.

T O P S E C R E T

/END OF MESSAGE/